1) Regarding claims 1 and 18, Powell does not disclose a solid catadioptric lens having a single viewpoint on an optical axis" as the Examiner alleges.

   a) As is apparent in Fig. 1 and all remaining figures, the chief rays of light (or center rays) entering through the refractive surface of Powell's lens are all refracted by different amounts. As a result they physically cannot and do not intersect at any single point within the lens. More precisely, they do not intersect at a single viewpoint within the solid catastrophic lens.

   b) Additionally, the region in which these chief rays (or center rays) do intersect is not located on an optical axis, as the Examiner states or the center axis called by Powell "axis of symmetry 12".

2) Further regarding claims 1 and 18, Powell does not disclose a lens "having a first focus coincident with the center, whereby the center is the single viewpoint (Fig. 1)" as stated by the Examiner. In fact, Powell does not address the relative positions of the foci or centers of his reflective and refractive surfaces at all anywhere in his teachings.

For the above reasons applicant submits claims 1 and 18 to be novel over Powell as required by 35 U.S.C. 102. The remaining claims rejected under 35 U.S.C. 102 are dependent

on claims 1 and 18, which have been demonstrated to be novel, and are therefore submitted to be novel in accordance with 35 U.S.C. 102 as well.

Obviousness Rejections under 35 U.S.C. 103

Further, claims 1 and 18 are unobvious because Powell lacks any teaching about the relative locations of the optical axis, the center of the refractive surface and a first focus of an ellipsoidal surface. There is no suggestion to a person skilled in the art of how to achieve a single viewpoint condition. Without this teaching a person skilled in the art would lack any motivation to derive a single viewpoint lens from the lens taught by Powell.

The applicant, on the other hand, specifically teaches how to build a single viewpoint lens. Claims 1 and 18 set forth the essence of that teaching to comprise:

> "a spherical refractive surface having a center C on said optical axis" and
> "an ellipsoidal reflective surface facing said spherical refractive surface and having a first focus F_1 coincident with said center, whereby said center C is said single viewpoint"

In view of the above argument, the applicant submits claims 1 and 18 to be unobvious over Powell as required by 35 U.S.C. 103.

Concerning the dependent claims rejected by the Examiner, the applicant maintains that due to novelty and unobviousness of claims 1 and 18 demonstrated above, the dependent claims adding further limitations an also novel and unobvious over Powell. This applies specifically to claims 9, 10, 11, 12, 20, 14, 15, 17, 21, 19 and 22. As a further note to claims 12, 20, 14, 17 and 21, the applicant would like to point out that Powell does not teach or suggest two ellipsoidal reflective surfaces in combination with a spherical refractive surface.

The Examiner has further rejected claims 2, 6, 8 and 16 under 35 U.S.C. 103(a) as being unpatentable over Powell in view of Garcia (U.S. Pat. 6,789,908).

Before addressing the rejection, the applicant would like to make three comments about the teachings of Garcia:

1) Garcia's system uses no spherical surfaces (refractive or reflective)
2) Garcia does not teach a solid cataleptic lens, but a free space two-mirror system and only suggests that it can be made as a single piece without explanation (see col. 3, lines 37-39). Fig. 1 cited by the Examiner to show a refractive surface does not show refraction taking place.
3) Not only are the foci of Garcia's ellipsoidal mirrors not on the optical axis, but the system has no focal points.

The reflective surfaces are oblate ellipsoidal mirrors, or ellipses rotated about a minor axis. In such mirrors the foci trace out a circle or ring (see col. 2, lns. 36-37 & 45-50). Therefore, there are no foci that define the type of surfaces that Garcia is using.

Turning now to the Examiner's rejection of claims 2 and 16, the applicant submits that:

1) Powell does not teach the invention as claimed.
2) Per above comments about Garcia, his teaching is so different that a person skilled in the art would see no motivation for combining it with Powell.

Regarding the Examiner's rejection of claim 6, the applicant notes col. 4, lines 40-41 of Powell teaching spherical and not ellipsoidal surface. The same applies to Examiners rejection of claim 8.

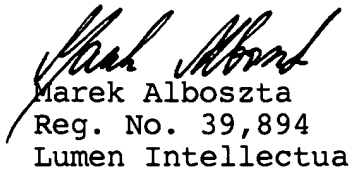
For the above reasons, claims 2, 6, 8 and 16 are submitted as unobvious over Powell in view of Garcia as required by 35 U.S.C. 103.

Conclusion

The applicant thanks the Examiner for pointing out claims 3-5, 7 and 13 as allowable. Given that the remaining claims have been demonstrated as allowable per above argument in

view of all prior art of record, the applicant solicits a speedy allowance of all claims.

Respectfully submitted,



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